

WHAT IS CLAIMED IS:

1. In a system that includes a network device that controls communication of data frames between stations, a method comprising:
 - receiving a data frame on a first logic component of the network device;
 - identifying receive port information associated with the data frame, the receive port
 - 5 information identifying a port on the first logic component on which the data frame was received;
 - transmitting the data frame and the receive port information to a second logic component on the network device, based on a destination address of the data frame;
 - receiving the data frame and receive port information at the second logic component;
 - 10 storing the receive port information on the second logic component;
 - processing the data frame to generate frame forwarding information;
 - transferring the frame forwarding information to an output queue on the second logic
 - component;
 - detecting a condition on the second logic component; and
 - 15 transmitting the receive port information associated with the data frame to the first logic component, when the condition is detected.
2. The method of claim 1, wherein the detecting a condition includes detecting a congestion condition associated with a resource involved in at least one of processing and forwarding the data frame on the second logic component, the method further comprising:
 - performing, by the first logic component, a congestion control-related operation in
 - 5 response to receiving the receive port information.
3. The method of claim 2, wherein the performing a congestion control-related operation comprises:

transmitting a pause frame via the port identified by the receive port information.

4. The method of claim 1, wherein the transmitting the data frame and the receive port information to the second logic component includes transmitting the data frame and the receive port information together in a single frame, the single frame including a field identifying the receive port information.

5. The method of claim 1, further comprising:
discarding the receive port information associated with the data frame after transferring the frame forwarding information to the output queue, when the condition is not detected.

6. The method of claim 1, wherein the processing and transferring associated with a plurality of data frames are performed in a same order as which the receive port information for the respective plurality of data frames is stored by the second logic component.

7. A network device including a plurality of logic devices coupled together to control communication of data frames between stations, comprising:

a first logic device comprising:
a plurality of ports configured to receive data frames from the respective
5 stations, and

first data frame processing logic configured to:
receive a data frame from a first station, the data frame having a
destination address associated with a second logic device,

identify receive port information associated with the data frame, the
10 receive port information identifying a port on the first logic device on which the data frame
was received, and

transmit the data frame and receive port information to the second logic device via the first port; and
a second logic device comprising:

15 a register configured to store receive port information associated with data frames received from the first logic device, and

second data frame processing logic configured to:

receive the data frame and receive port information,

store the receive port information in the register,

20 generate frame forwarding information for the data frame,

determine whether a condition exists with respect to a resource involved in processing the data frame, and

send a signal to the register when the condition exists, the signal

indicating that the register is to output receive port information associated with the data

25 frame to the first logic device.

8. The network device of claim 7, wherein the condition relates to a congestion condition associated with the resource.

9. The network device of claim 8, wherein the first logic device is further configured to:
receive the receive port information from the second logic device, and

perform a flow-control related operation with regard to the port identified by the receive port information.

10. The network device of claim 9, wherein the flow-control related operation comprises transmitting a pause frame via the port identified by the receive port information.

11. The network device of claim 7, wherein the register outputs receive port information corresponding to an oldest entry stored in the register in response to receiving the signal.

12. The network device of claim 7, wherein the second logic device further comprises:
a plurality of output queues corresponding to ports on the second logic device, wherein the second data frame processing logic is further configured to:

output frame forwarding information to one of the plurality of output queues; and
5 send a second signal to the register when the condition does not exist, the second signal indicating that the register is to discard the receive port information associated with the data frame.

13. The network device of claim 12, wherein the register discards receive port information corresponding to an oldest entry in the register in response to receiving the second signal.

14. The network device of claim 7, wherein the second data frame processing logic processes data frames in a same order as which the corresponding receive port information is stored in the register.

15. A system comprising a plurality of devices configured to control communication of data frames between stations, comprising:

a first device configured to receive a data frame having a destination address associated with a second device, identify receive port information associated with the data frame, and
5 transmit the data frame and the receive port information to the second device; and
a second device configured to receive the data frame and the receive port information,

process the data frame to generate frame forwarding information for the data frame, determine whether a congestion condition exists on the second device, the congestion condition relating to a resource involved in at least one of processing and forwarding the data frame to its destination,
10 and transmit the receive port information associated with the data frame to the first device when the congestion condition exists.

16. The system of claim 15, wherein the first device is further configured to:
receive the receive port information from the second device, and
perform a flow control-related operation with respect to a port identified by the receive port information.

17. The system of claim 16, wherein when performing a flow control-related operation, the first device is configured to:

generate a pause frame requesting suspension of data traffic, and
transmit the pause frame via the port identified by the receive port
5 information, without transmitting the pause frame via other ports on the first device.

18. The system of claim 15, wherein the second device comprises:
a first-in, first-out (FIFO) device configured to store receive port information for a number of data frames; and
flow control logic configured to transmit a signal to the FIFO device when the

5 congestion condition is detected, and wherein
the FIFO device outputs the receive port information corresponding to a data frame associated with the congestion condition, in response to receiving the signal.

19. The system of claim 15, wherein the second device comprises:
a FIFO device configured to store receive port information for a number of data frames;
and
a plurality of output queues corresponding to ports on the second device, the second
device being further configured to:

output the frame forwarding information to one of the plurality of output queues, and

wherein

the second device processes data frames received from the first device in a same order as
which the receive port information for the respective data frames is stored in the FIFO device,
such that when the frame forwarding information is output to one of the output queues, an oldest
entry in the FIFO device relates to the frame forwarding information being output to the output
queue.

20. The system of claim 15, wherein the second device comprises:
a first-in, first-out (FIFO) device configured to store the receive port information for a
number of data frames, the second device being further configured to:
transmit an oldest entry in the FIFO device to the first device when the congestion
condition exists.